

- Contract out customized training in customer service for MSD employees and other agreed upon required training, such as diversity management and regulatory compliance, so that MSD employees will have the advantage of this training in the nearer term
- Make all training available to MSD employees housed in and managed by Human Resources, in the person of a skilled training and development professional within a five-year time frame. Benchmark training performance measures against industry standards

#### **The Print Shop**

Form an interdivisional team to collect input from print shop users as to the variety of printing jobs most commonly requested; use these data to select and purchase equipment that will handle these requirements.

#### **Safety**

Continue reaching out to other utilities to form a utility safety services support network, which exchanges data on a regular basis.

*WWA can lead the transformation of all non-core services into the Business Support Services Division, which will provide state of the art administrative and technical back up to Collection and Treatment.*

#### **Leadership Issues**

There are pockets of strength within WWA that need to be developed and supported. The superintendent needs to make herself more available to her staff, just as MSD's Director needs to make himself more available to the MSD employee population at large, in order to keep in touch with what her staff are hearing from internal and external customers.

Her division can and does operate to a large extent without her, but it would stronger with her. She has a great deal of knowledge of MSD's history, and the evolution of the policies and procedures mandated by the City of Cincinnati, which could be useful to those who are grappling on a daily basis with the difficulties of balancing employees' needs with City requirements. We would suggest that she make this intention known to MSD's Director and select out of activities that pull her away from her office on a frequent basis. Her priorities should be focused on finding technical solutions to paperwork logjams and on assisting the Director and the Deputy Director in building better, more efficient processes involving related MSD/City functions.

#### **Conclusions**

Wastewater Administration, in the person of the HR Committee already has within it the seeds of the future of MSD. In the short term, and using the HR team as the model for effective, productive inter-divisional teamwork, WWA should lead the way toward breaking down barriers between divisions to drive systemic change across MSD.

For the longer term, WWA needs to focus on marrying all administrative support systems with the larger system in the City and on facilitating that relationship. By eliminating duplication of services, and improving technology to deliver those services that are required internally, WWA can lead the transformation of non-core services into the Business Support Services Division, which will provide state of the art administrative and technical back up to Collection and Treatment.

#### **4.3.Information Technology**

Tasked by the Director with serving and supporting the core functions of the utility, IT is staffed with nine individuals and an Information Technology Manager. The mission of the IT group is to provide computer software, hardware and technology support to all divisions of MSD. Their activities are too numerous to list here in full, but are defined in general by a focus on keeping business software applications and data available, and maintaining the necessary hardware and software support.

### Summary of Strengths

- Because they had originally worked to support technology in a particular division, IT employees have a good knowledge of how the divisions operate and a real desire to please their customers.
- The group is managing an implementation of a Storage Area Network (SAN) that will greatly improve service and maintenance of data organization-wide.

### Areas of Improvement

While accountable for maintaining and supporting various business software tools, staff do not have all the skills required to do their jobs without outside help. Also, measured against current responsibilities, IT is understaffed. Compounding the difficulties caused by limited resources, the service IT offers is reactive in nature. As a result, the expectations of its customers are not being met. Simply adding staff will not, however, solve the problem. In addition to staffing considerations, we suggest the following:

- Design a project planning and prioritization system for performing all major jobs that will ensure that customers' expectations are met, and that internal deadline, resources and projects budgets are controlled.
- Prepare a customer service process that establishes and maintains a system of communication and involvement between the IT Group, and MSD divisions and City Stakeholders, to help define service expectations, meet MSD goals and achieve group annual targets.
- Design and implement a Help Desk system.
- Develop an IT Group training program to improve the networking, troubleshooting, hardware and software skills necessary to meet MSD business goals and expectations.
- Hire skilled personnel to take on those hardware and software applications that are beyond the ability of the present staff to service.

### Leadership Issues

With a mandate from the Director to upgrade and sustain technology solutions for MSD's major business processes, the IT manager and her group of largely self taught employees have worked hard to provide the services they perceive as being requested of them by their customers. Unfortunately, with little ongoing direction from the OOD, and no time spent talking to their customers with an eye to understanding customer expectations or developing a long term strategic plan, IT finds itself struggling to keep up. It is for these reasons that we have already recommended that IT report to the superintendent of Wastewater Administration, so that it can receive more day-to-day guidance and more readily integrate its services into the long-term objectives of Business Support Services.

***Hire skilled personnel to take on those hardware and software applications that are beyond the ability of the present staff to service.***

We would also suggest that in addition to focusing on developing a strategic plan and seeking expanded skills training for her staff, the IT Manager be given the opportunity to participate in an advanced curriculum for beefing up her managerial skills. Many of the misunderstandings that have occurred between IT and MSD's core businesses, as well as the present react mode of her staff, have been the result of the manager's communications style. While her intentions are nothing but the best, there is room for improvement in her interactive and listening skills. Overcoming these deficiencies in the next 12 to 18 months will be necessary, so that she can effectively lead the changes that must take place in IT, in order to protect it from being contracted out.

## Conclusions

Appropriate information technology solutions are critical to the future of MSD and its ability to provide quality, low cost service to its customers. As it exists today, the MSD IT group stands poised to make a real contribution both internally and externally, if it will take on the challenge and the hard work of planning, prioritization and improved communication with its customers.

At the same time, IT cannot plan or prioritize in a vacuum. A bigger picture business strategy will need to be provided to IT, to make sure that the group is headed in the right direction. MSD executive staff had begun to put together this strategy, but was asked by Brown and Caldwell to wait until the Assessment of IT had been completed and shared with the IT group. We are now recommending that MSD's executive staff move ahead with the development of that strategy, making its completion a priority in the coming months.

### 4.4. Wastewater Engineering

Five sections comprise the Wastewater Engineering Division (WWE): Consultant Design/Special Projects, Design/Engineering Services, Contract Administration, Construction Management and Surveying/Mapping. There are 103 funded positions in WWE with 10 vacancies. At last count, the staff totals 93 people with some flux on a monthly basis. In 2003, WWE is budgeted for \$7,026,499, representing approximately 9 percent of the total MSD operating budget.

**I** *WWE does not have a clear overall strategic plan.*

The WWE core services are identified as:

- Provide design and construction services for treatment and collection facilities.
- Provide information on facilities to other divisions within MSD, the City and the County.
- Review public and private requests for permit and plan submittals for conformance with MSD standards.

#### Summary of Strengths

- Key to WWE performance and service improvements is an identification of goals and understanding of process steps. WWE has listed goals for each section and developed process maps for many of its core and support services.
- Also currently underway is the development of project tracking software and program management applications. When implemented and utilized properly, project information will be better monitored, collected and coordinated. This will give management and staff more control over the design and construction process.

#### Areas of Improvement

- WWE does not have a clear overall strategic plan, so existing goals are not complete or aligned with MSD's overall vision and mission. This may be one of the reasons that other divisions within MSD have expressed concerns with the level of service provided by WWE.
- As part of developing a strategic plan for the division, WWE will have to identify the needs of its customers and the reasons for the gaps that exist between its customers' expectations and the division's output.
- MSD needs to move from a reactive to a proactive CIP process that has a long-range view. Creating a 20-year wastewater collection and treatment facilities Master Plan is necessary to make this step and will help MSD prioritize projects, identify schedules and

improve customer service. Individual planning efforts related to CSO, SSO, security and long-term replacement planning should be integrated into this overall Master Plan. The Master Plan can serve as the capital component to a comprehensive management approach that MSD needs to begin moving towards.

Four specific problems that currently impact the Division's ability to provide excellent service and our suggestions for addressing these issues are listed below.

*The Deputy Director cannot simply mandate that the Strategic Plan and long-range facilities Master Plan be developed, but must work closely with both the superintendent and WWE managers to develop and implement the plan.*

#### *Legislative Process*

- The Office of the Director (OOD)<sup>2</sup> should work with WWE and the Board of County Commissioners (BOCC) to modify the present process of multiple presentations, by asking that the OOD be able to make the final decision on a project, up to an agreed upon dollar value. Only after that, would a presentation before the BOCC be required.
- WWE should assign the drafting of all legislative packages to one person (or more should the workload require it) to reduce the time commitment from project managers.
- Higher contingencies fees should be built in to each budget request so that has the prerogative to increase that budget based on the appropriate input from the project manager. The project manager would make his or her presentation to the OOD, instead of the BOCC, to increase the budget.
- Any discussion regarding the modification of the legislative package will require a degree of trust on all sides. The current process was established due to an erosion of confidence, so in order to improve the process, these issues will have to be openly discussed and agreed to by all parties, to be certain concerns are still addressed by any changes to procedure.

#### *ROW Acquisition*

- Evaluate the feasibility of staffing an MSD-only real estate position in the City to prevent MSD requests from getting bogged down in the general queue. This position could be located in the City Real Estate office, or within MSD, depending on legal requirements. The position would be solely responsible for negotiating real estate transactions for MSD.
- Relocate to the project management software information on progress on all ROW requests and performance statistics on approvals, so that the data are available for all MSD staff to review.

#### *Utility Reviews*

- The OOD should meet with all other utilities to discuss the review process and to find out why reviews are not being conducted properly. How this impacts all utility customers and the City should be addressed.

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<sup>2</sup> Throughout this section, where the Office of the Director is referenced, the designation refers to both the Director and the Deputy Director, unless otherwise indicated.

- A Memorandum of Understanding (MOU) should be created between each utility detailing reasonable review times and level of effort expectations. This MOU would exist under the banner of reducing government costs and helping the City Manager and City Council in their efforts to improve Cincinnati government.

#### *Performance Tracking and Accountability*

- Already in process, the new project management software will centralize information on each project, including budgeted hours and costs, schedule, current status, filing and other parameters that will allow each project manager to actively manage his or her work. The system will allow MSD to collect and analyze significant amounts of data not just on project status, but also on project manager performance.
- However, MSD must understand that this is only one tool, and not the answer to problems the division has in getting its work done. A management and accountability structure must also be put in place for any of the recommendations being made to succeed.

#### **Leadership Issues**

Despite the development of the Priority Ranking System (PRS) and the impending project management software to track project status, WWE still lacks a comprehensive and cohesive strategy to meet its customer's needs with fiscal responsibility. The Deputy Director cannot simply mandate that the Strategic Plan and long-range facilities Master Plan be developed, but must work closely with both the superintendent and WWE managers to develop and implement the plan. For too long, WWE has been left to operate independently, without goals and objectives for each project and each project manager. This has led to the 'out of my control' management style that is prevalent today.

More clearly defined and specific goals will enable employees to see where they're at with regard to their objectives and will make the review process more representative of their actual performance. The ultimate goal is to give each employee the tools and resources he or she needs to manage projects, thereby increasing each employee's accountability for achieving the desired results. This will be difficult, given the present culture of placing blame elsewhere, and impossible without the direct and prolonged participation of the Deputy Director.

For this reason, we suggest that in the immediate future, the Deputy Director take over the role of superintendent of Wastewater Engineering temporarily to do the following:

- Utilize the present superintendent's strengths where they are most needed, in the oversight and implementation of the program management tool; as we have indicated already in this section, this tracking tool will be essential to bringing MSD up to speed on the timely delivery of CIP projects and will require someone with an understanding of the entire engineering process to stay on top of the data and to interpret what it is saying.
- Work over the next two months with selected outside consultants, and Wastewater Collection and Treatment to develop a strategic business plan.
- Reorganize according to that plan so that large projects are no longer designed in-house but instead, contracted out, and managed by a group of in-house program managers;
- Keep small design projects, such as pipelines, under the purview of an in-house design team. Staffing should be according to the following parameters for workload for each WWE project manager:
  - Four to five in-house design project averaging \$100,000 in design costs each, or
  - Four to five consultant designed projects averaging \$200,000 in design costs each, or

- Eight to ten in-house design projects averaging \$50,000 in design costs or less.
- Retain outside program management resources to help WWE 'catch-up' on CIP project implementation.
- Maintain enough surveying staff to support the in-house design team, and inspectors to support large Treatment projects and the construction of in-house designs.
- Hire a third party construction inspector/manager to be available to oversee large projects being built outside of MSD. Decide on a project-by project basis whether both the in-house inspector and the third party should be involved, or one or the other be placed in charge.
- Plan to bring all engineers presently working in other divisions back into the centralized engineering function.
- Hire an outside consultant to put together the long-range facilities Master Plan, and update the Master Plan every five years.

### **Conclusions**

After 12 to 18 months, the strategic business plan and the Master Plan should be driving the decision-making process for Wastewater Engineering. The reputation of the division should have improved dramatically, along with customer service and the timely delivery of CIP projects. As we have noted, at least the first six months to one year will require the direct intervention of the Deputy Director, and the help of continuing consultant support. It simply will not be enough to tell division personnel to do better, and expect it to happen.

What we are recommending is not unusual, but rather, common practice in large utilities around the country. By addressing the issue of planning at both the business and process levels, communicating those plans clearly to WWE employees by means of goals and objectives aligned directly with the division's strategic plan, and using outside contractors to help the division catch up, WWE and MSD will begin to regain the confidence of both policy makers and internal customers. This is the only approach we feel will successfully move WWE out from under its present workload and encourage responsiveness to the needs of its customers.

### **4.5. Division of Industrial Waste**

The mission of the Division of Industrial Waste (DIW) is to administer and enforce the EPA-mandated Pretreatment Program and implement the Surcharge Program for MSD. DIW is comprised of four sections: Permits and Compliance, Sampling and Surveillance, Laboratory, and Administration/Clerical. The division shows 49 positions funded with five positions vacant, for an existing staff of 44. The FY2003 budget for DIW is \$4,062,281, which is 5 percent of the total MSD O&M budget. DIW recovers all of its costs for the Pretreatment Program from the industrial community through annual fees, monitoring fees, and service fees based on the size of the customer's water line.

DIW core services are identified as follows:

- Administer and enforce the EPA-mandated Pretreatment Program
- Administer excess-strength industrial waste Surcharge Program
- Provide sampling and surveillance services for the Pretreatment Program, Surcharge Program, Auxiliary Meter Program, and Sewage Holding Tank Program

- Provide laboratory analytical services for the Pretreatment Program, Surcharge Program, Treatment Division, City of Cincinnati, and Hamilton County.

#### **Summary of Strengths**

- Generates \$10M per year gross revenue (\$9M Surcharge; \$1M Pretreatment Fees and Fines)
- Extensive Quality Assurance/Quality Control program
- Use of LIMS to document test results
- Recognized as best in Ohio in criminal enforcement by the Attorney General's Office, Ohio EPA, and the FBI
- Pretreatment Program recognized as a 'model' in Ohio by Ohio EPA
- Pollutant testing for Local Limits at Treatment Plants four times more than required to ensure fair enforcement and protect treatment

#### **Areas of Improvement**

- External customers unclear about due date for payment of pretreatment fees, while their invoicing needs are not completely understood by DIW.
- Expectations and requirements for time and accurate delivery of analytical results are not always communicated properly to the customer.

***DIW must know more about costs, and customer needs, and establish a clear link between its employees' goals and objectives, and customer requirements, both internal and external.***

- Connection between daily activities, performance measures and goals and objectives is not implemented throughout the organization.
- DIW is not completely aware of or sensitive to the challenges other divisions face.
- Increase pretreatment actions for FOG at Mill Creek Treatment Plant.

#### **Leadership Issues**

DIW's Pretreatment Program and Laboratory need to reassess their role in supporting the Treatment and Collection Divisions. While we recommend that MSD centralize Treatment Division lab functions at DIW, this does not preclude the necessity of DIW becoming more responsive to the needs of its internal customers. DIW must understand and resolve the interdivisional issues that keep it from providing the best internal customer service it can.

Without losing sight of the fact that it must uphold the regulations of the Ohio EPA, and protect MSD's investments, it must also support the success of the Industrial Users in the community. Essentially, DIW is only successful when its customers are successful. To that end, DIW needs to develop a strategy of support to these customers that provides critical services where needed, when needed, and at an affordable cost. To do this, DIW must know more about costs, and customer needs, and establish a clear link between its employees' goals and objectives, and customer requirements, both internal and external.

***DIW is not completely aware of or sensitive to the challenges other divisions face.***

Finally, leadership of DIW must address the loss of morale within the Division that is caused by the continued agitation of certain disgruntled employees. DIW is not alone in this, as there are serious

conflicts between personalities in other divisions as well. But constant expression of dissatisfaction from an angry few has negative effects not only internally, but also on the policy makers who are pulled into the problems. MSD must work hard in the next several years to improve its reputation as a well-managed utility. It can only do this by confronting those who inappropriately release their frustration and making sure that there are consequences for behavior unbecoming to the profession.

### Conclusions

As has been noted above, DIW has become a model for the industry in several of the core services it provides. It is seen as tough, but fair, in the administration of its duties, and as actively involved in local outreach to the community. At the same time, it suffers from the same lack of big picture strategic direction that the other divisions of MSD do, and tends under duress to pull inward and close ranks. While it can certainly be said that without Treatment and Collection, DIW would not exist, it must also be said that Collection and Treatment could not function as effectively without DIW. MSD divisions need to focus on becoming a team of interconnected operations focused on a single purpose, providing top-notch customer service. Enormous progress to this end will take place, if DIW will lead the charge toward integrating its expertise with the needs of MSD's core business services.

### 4.6. Wastewater Collections

The Wastewater Collection Division (WWC) is organized by functional areas to provide core service delivery for collection and conveyance of wastewater, to approximately 800,000 Hamilton County residents with more than 200,000 sewer connections. Generally, WWC functions are limited to the separate and combined sanitary gravity sewer system and do not include pumping stations. The system includes over 3,150 miles of sanitary and combined sewers. In addition to state and federal regulatory requirements, Collection must also conform to the CSO Nine Minimum Controls and the Consent Decree and Interim Partial Consent Decree on Sanitary Sewer Overflow (SSO's), the latter Consent Decree lodged on February 14, 2002.

WWC has 145 employees, with 154 positions authorized, and a budget of \$17,284,149, which represents 21 percent of the total MSD operations budget. Of this amount, 36 per cent is direct labor costs, including overtime, fringe benefits are 8 percent, and 46 percent, or \$8,300,000, is direct contract costs.

Collection core services are identified as:

- Perform Closed Circuit Television (CCTV) and Condition Assessment of the Gravity Sewer System for MSD and external agencies on mainline sewers and lateral sewers both on and off road.
- Perform internal and external visual inspection and condition assessment of large diameter sewers that cannot be inspected by other methods
- Perform construction, repair and rehabilitation of Sanitary and Combined Sewer systems and building sewers within the public Right-of-Way or easement.
- Respond to and investigate Customer Service Requests
- Perform preventative and corrective maintenance of gravity sewers, on road and off road, including hydraulic cleaning, mechanical cleaning and chemical cleaning
- Provide CSO and SSO monitoring and reporting to EPA
- Perform bypass pumping
- Flood gate installation and flood protection of Mill Creek Valley

- Manage contracts for cleaning, CCTV, lining and repairs for manholes, mainlines and laterals
- Maintenance of the computerized system wide model

#### **Summary of Strengths**

- Level of service strives to meet the higher expectations of the public through the development of creative solutions for difficult problems, such as the design, fabrication and installation of custom equipment to maintain those parts of the sewer system (40%) that are inaccessible by normal methods
- Efficient and effective use of outside contractors to reduce costs
- CCTV, Complaints, Back-ups and rehabilitation databases linked to and displayed on GIS; GIS can be used as part of tracking system, as crews have laptops on trucks, with database updated monthly
- 100 percent of off road CCTV/Flushing is preventative maintenance
- CCTV does field defect classification, which is then reviewed for level of priority, so timely action can be scheduled and taken
- PM contracts are flat rate bids based on pipe criteria; very comprehensive specifications have been developed for Clean/CCTV/Baiting
- All CCTV and cleaning data are captured in the Foxpro database
- Emergency TM service contract required to respond within one hour and can be used for non-emergency reactive work when MSD crews are scheduled on PM, so PM crews are not diverted.
- WWC has developed good labor relations, with only two grievances in seven months.
- Most supervisors and managers have clear goals and objectives for which they are held accountable. This situation is facilitated by the fact that WWC employees report to a central location.

#### **Areas of Improvement**

- Problem in work order system results in duplication of work by reactive crews performing work that has already been done. CCTV disk and worksheet data is captured, but information may not be queried before work order is issued.
- Crews get diverted two to three times/week from planned/scheduled work to provide corrective maintenance support when and where needed based on priority, which affects productivity, particularly in rainy season.
- Crew rotation is too short for employees to fully learn the job and mandatory training and EVET affect the productivity of the crews.
- Some crewmembers who are responsible for the supervision of the crew will not take on that role, as they are uncomfortable managing fellow union members.
- The GIS must be interfaced with the MAXIMO Maintenance Management System (work order system). The value of MAXIMO to the Collection Division comes from this interface. Collections must seek out and gain support for this effort from the IT Section

of the Office of the Director. The IT Section needs to help Collection customize MAXIMO for use with GIS.

- Collection gathers a large amount of field data that must be input to the data systems. The timely, accurate, and cost effective input of data is critical to the success of Collection efforts that are supported by these systems. The use of data entry personnel could save cost and free more highly trained and highly paid Collections personnel to gather and analyze the data.

### **Leadership Issues**

Many of the problems Collection encounters while trying to get its work done are interactive in nature, meaning that Collection is dependent upon both internal groups such as the Division of Wastewater Engineering and Information Technology, and external entities such as Water Works to even get a job started. WWC also suffers, as do other divisions, at the hands of a City bureaucracy that slows down hiring and purchasing, and whose mandate on overtime has created conflict in the ranks.

***The IT Section needs to help Collection customize MAXIMO for use with GIS.***

At the same time, while the internal customer service survey indicates that Collection employees have a higher than average sense of the goals, direction and priorities of the division, and that better than 80% are proud to work for MSD, they still do not clearly understand the work of other divisions, or how what they do fits into the work of MSD, overall. At all levels, one gets the message that the division just wants to be left alone, and to do things their way. There is a we-they attitude that permeates most conversations that have to do with Collection and its interfaces with the rest of MSD that makes it difficult for the divisions to work together toward solving problems, unless a crisis is upon them. This will have to change, if MSD wants to address interdivisional issues that affect morale and productivity.

MSD outsources much of the Collection repair work in its service area to contractors. The annual amount of that work represents 46% of Collection's budget. Both Management and Union leadership need to explore the potential for mutual benefit that could be realized from in-sourcing some or all of that work. However the current arrangement came about in the past, the threat of managed competition should renew the discussion. At the heart of this discussion are the topics of reducing cost and keeping O&M of MSD in public hands without one being sacrificed for the other.

### **Conclusions**

An effective and cost efficient Collection Division is critical to the reputation and credibility of MSD. Collection is in direct contact with the public and usually because of complaints of flooding and stoppages. While Collection provides excellent wastewater and Stormwater services to most citizens most of the time, it's the flooding and stoppages that get remembered and MSD gets the blame. The Collection Division is MSD in the eyes of the public. That is why Collection must seek more, not less, understanding and involvement in all the challenges of all the Divisions of MSD.

Collection must take seriously the need to form a series of interdivisional and cross-functional teams to address the optimization activities suggested. This interaction of core service and support service divisions will be critical to the success of improvements at MSD. As part of this interaction, Collection must effectively communicate its needs for support to the appropriate support teams and divisions.

### **4.7.Wastewater Treatment**

The Treatment Division is responsible for the administration, operation and maintenance of seven major wastewater treatment plants, 11 smaller wastewater treatment plants, and 140 wastewater pumping stations. The Mill Creek and Little Miami WWTPs incinerate solids for all the other

facilities, which only process liquid wastewater and subsequently thicken to dewater sludge prior to transport.

***The division has reduced electrical usage and demand by approximately 20 percent since 1995, which has had a direct impact on cost reductions.***

Currently, there are 322 budgeted (343 approved) full-time staff positions authorized in the divisions, consisting of administrative, engineering, operations, maintenance and training personnel. Approximately 91 percent, or 292, of these positions are filled. Wastewater Treatment's budget in 2003 is \$41,026,145. Approximately 45 percent, or \$15,371,485, of these costs is labor-related.

Core services performed are identified as:

- Operations: Operations is responsible for day-to-day oversight of the seven large treatment plants and eleven smaller package plants. It is also responsible, through an MOU with the Stormwater Management Utility, for the operations of the Barrier Dam during flood stage events that would otherwise allow the Ohio River to flow into Mill Creek.
- Maintenance: Maintenance is responsible for the majority of preventative and corrective maintenance of all MSD facilities, not just the treatment facilities. Maintenance consists of mechanical, electrical and instrument classifications, as well as providing support for Stormwater facilities, including the Barrier Dam. Heavy maintenance performs work that takes more than two days, or requires special skills, tools or capabilities not found elsewhere in MSD operations.
- Laboratory: Five Laboratory Technician 3s perform analytical tests for some conventional permit parameters at Little Miami, Polk Run, Muddy Creek and Taylor Creek. They also perform operational tests used for process control.
- Engineering: This section provides design, construction management and start up assistance and coordination for treatment plant and Stormwater CIP projects. Since 1997, the Engineering Section has managed approximately 156 projects with a value of approximately \$6.7 million.
- Other services: machine shop and welding services to other City of Cincinnati departments; landscaping and snow removal for MSD facilities; laboratory services for permit compliance testing. This is by no means an exhaustive list.

#### Summary of Strengths

- Centralization of services, such as pump station/lift station maintenance and consolidation of larger treatment plants into one of three operations and maintenance sections has begun to optimize staff levels, reduce duplication of services and increase efficiency. In the past five years, the division has reduced staffing by nine percent, amounting to annual savings of about \$1.5 million.
- The division has reduced electrical usage and demand by approximately 20 percent since 1995, which has had a direct impact on cost reductions. It has also implemented a natural gas procurement strategy that reduced the unit price of natural gas, and is pursuing a similar strategy for the purchase of electricity.
- The division has good to excellent National Pollutant Discharge Elimination System Compliance.

- A computerized maintenance management program, MAXIMO, is being implemented by many maintenance groups in the division, and SCADA upgrades are planned or underway system-wide.
- Utilizing the functionality of MAXIMO, Central Services uses a cost estimating process for projects, factoring labor and benefits into the estimate.
- Staff at smaller facilities work as cross-functional teams.
- Job aids are developed to help document information about current operations, and training is not done just for the sake of it, but to increase practical skills associated with day-to-day operations and maintenance.

#### **Areas of Improvement**

While it is obvious from the preceding remarks that the Division of Wastewater Treatment (WWT) has been focused for some time on optimizing its processes and reducing its costs, and has had several notable successes in this area, there is still much to be done to make all of WWT's facilities representative of best practices.

Solids and liquids process control strategies are not clear at most plants. These control strategies must be institutionalized for process optimization to be successful. For example, digestion and incineration at Mill Creek do not appear to be interconnected from a process control perspective, thereby increasing treatment costs.

Maintenance priorities between operations and maintenance groups are also not spelled out. In some cases, the approach to equipment maintenance appears to be run-to-failure. This leads to unplanned equipment outages, causing "fire drills" to avoid process upset and/or permit non-compliance.

Major optimization opportunities include both process and non-process areas. Some examples are listed below.

- Process related measures which can provide substantial savings in power, chemicals and labor effort include:
  - Automated control of sodium hypochlorite and sodium bisulfite dosages for disinfection would decrease chemical costs and reduce the amount of time spent controlling the system.
  - Leveraging polymer vendor expertise to optimize polymer dosage for dewatering process, will lead to a reduction in polymer costs and/or dosages.
  - Treating the entire solids handling/incineration process as one process, and optimizing the entire process, will ensure compliance and reduces costs.
  - Optimizing the nitrification process at Polk Run and Sycamore could well lead to a reduction in electrical costs by reducing the air demand on the blowers.
  - Increases in the use of MAXIMO reports will decrease hours spent on corrective maintenance and provide increased reliability and availability of critical treatment equipment. The costs for this will be offset by a reduction in corrective maintenance costs, and provide improved process reliability.

Non-process key assumptions that are critical to cost saving include:

- Modification in City procedures and policies that are constraining WWT effectiveness (e.g. hiring and purchasing practices).
- Better inter-divisional communications & elimination of duplication of support services that now exist within WWT.

- More focused training.
- 6 □ Increase community awareness by plant tours to other facilities.
- To verify that there are indeed savings from doing in-house work, compare the cost savings based on a comparison of estimated costs with actual costs.

On the personnel side, staff/work groups at the larger facilities operate as independent functions, and there is little or no interaction among these groups to learn from others' experiences. This is why the majority of our recommendations for optimization activities involve the formation of multidisciplinary teams. These teams will be critical to the success of any improvement efforts undertaken, and will need the complete support of management at all levels.

### **Leadership Issues**

Most important for the future of treatment, as well as other divisions at MSD, will be the relationship between management and the union. Feedback from treatment employees in the Internal Customer Service Survey, cited in the introduction to this document, was particularly harsh with regard to WWT supervision's ability to provide direction, encourage collaboration and treat individuals equally. Less than 50% of treatment employees feel they receive adequate guidance or input from their supervisor, and less than 50% say that they are recognized for a job well done. This indicates that there is a significant need for training at the supervisor level.

Some of the discontent within treatment may be due to the fact there is an acting superintendent who has made it clear that he does not want the job. This leads some employees to believe that he is not taking action on problems in the division because he is merely biding his time until his replacement arrives. While this may not be a fair assessment, it is certainly a factor in whether treatment employees think they are being guided by a cohesive business strategy, or left to their own devices. The Deputy Director and the Acting Superintendent must develop and communicate to the division an interim plan, to demonstrate that treatment is moving toward the implementation of specific goals and objectives.

### **Conclusions**

As the largest by far of MSD's divisions, Treatment's issues are complicated not only by its size, but also by its geography. Unlike DIW, Administration, Collection or Engineering, Treatment's employees never find themselves all in the same place at the same time. This makes communication of policy and procedure difficult, at best, and encourages the rampant use of the rumor mill.

We can, therefore, not stress strongly enough that WWT take seriously the need to form a series of interdivisional and cross functional teams, to address the optimization activities suggested here, and in the accompanying tables. By building the infrastructure by which employees can escape the bias imposed by their work groups, and through which they will gain a better understanding of the division as a whole, Treatment's management will be better positioned to make the improvements necessary to be competitive.

### **4.8. Stormwater Management Utility**

SMU specific comments under development.

#### **Summary of Strengths**

#### **Areas of Improvement**

#### **Leadership Issues**